1-1 A Solving Linear Equations

_____ 1. Solve for x: $5(x - 2) - (3x - 7) = 6(-2x + 4)$

_____ 2. Solve for x: $3(x - 4) - (x - 3) = 20$

_____ 3. Solve for x: $3(x - 1) - (2x + 4) = -4$

_____ 4. Solve for x: $3(2x - 4) - 4(x - 3) = 100$

_____ 5. Solve for x: $5(2x - 1) = 5x + 2(2x - 10)$

1-1 B Variables

_____ 1. Simplify $(ab^3)(4a^2b^2)$

_____ 2. Simplify $(-3a^3b^5)^2$

_____ 3. Simplify $(n - 5)^2$

_____ 4. Simplify $(2n^3 + 5n)(4n^3 + 2n)$

A. $8n^6 + 24n^4 + 10n^2$ B. $8n^9 + 24n^4 + 10n^2$

C. $8n^6 + 20n^3 + 10n$ D. $8n^9 + 24n^3 + 10n^2$

_____ 5. Simplify $(a^4n^3x^6)(a^2n^3x^6)$

A. $a^8n^6x^{12}$ B. $a^6n^9x^{12}$ C. $a^6n^6x^{36}$ D. $a^6n^6x^{12}$

1-2 Simplifying Expressions

_____ 1. Simplify $4ab^3 - 3ab^2 + 2ab - 5ab^2 + 2ab^3 - 5ab - 4ab^2$

_____ 2. Simplify $(x^7)(4x^3)^4 + (x^6y^4)^2$

_____ 3. Simplify $(2n)(4n) + (6n)(4n)$

_____ 4. Simplify $(2n^3y^4)^2 + n(n^5)y^8$

A. $5n^6y^8$ B. $3n^6y^8$ C. $5n^3y^4$ D. $8n^{12}y^{16}$

_____ 5. Simplify $2(2n - 4) - (6n - 2)$

A. $-2n - 10$ B. $-2n - 6$ C. $2n - 10$ D. None of the above

1-3 Simplifying Radicals

_____ 1. Simplify $\sqrt{-4}$

_____ 2. Simplify $\sqrt[3]{8a^4b^6}$

_____ 3. Simplify $\sqrt{-40}$

_____ 4. Simplify $\sqrt{-80a^2}$

_____ 5. Simplify $\sqrt{20a^7y^2}$

1-4 Simplifying Radical Expressions

_____ 1. Simplify $\frac{8 \pm \sqrt{-16}}{2}$

_____ 2. Simplify $\frac{-16 \pm \sqrt{-32}}{4}$

_____ 3. Simplify $\frac{18 \pm \sqrt{40}}{10}$

_____ 4. Simplify $\frac{2 \pm \sqrt{20}}{2}$

_____ 5. Simplify $\frac{9 \pm \sqrt{18}}{3}$

1-5 Simplifying Expressions and Negative Exponents

_____ 1. Simplify $\dfrac{4a^3b^5c}{6a^2b^3c}$

_____ 2. Simplify $\dfrac{c^3w^{-5}h^{-1}}{c^{-1}w^{-2}h}$

_____ 3. Simplify $\left(3a^{-5}\right)^{-2}$

_____ 4. Simplify $\left(3s^{-2}t^4u^{-1}d\right)^{-3}$

_____ 5. Simplify $\dfrac{y^2e^{-5}s^4}{y^7e^2s^{-4}}$

2-1 Factoring Polynomials

_____ 1. Factor $x^2 - x - 56$

_____ 2. Factor $x^2 + 5x - 24$

_____ 3. Factor $6x^2 + 9x - 105$

_____ 4. Factor $x^2 - 49$

_____ 5. Factor $10x^2 + 29x + 10$

2-3 Factor by Grouping

_____ 1. Factor $3x^2 + xy - 12x - 4y$

_____ 2. Factor $10x^3 - 6x^2 + 15x - 9$

_____ 3. Factor $3n^3 + 12n^2 + 2n + 8$

_____ 4. Factor $y^5 + 3y^3 + 4y^2 + 12$

_____ 5. Factor $n^3 + 2n - n^2 - 2$

2-4 Factoring Cubic Polynomials

_____ 1. Factor $8x^3 - 27$

_____ 2. Factor $8n^3 + 729y^3$

_____ 3. Factor $n^3 + 27y^3$

_____ 4. Factor $1000x^3 - 27$

_____ 5. Factor $x^3 - 125y^3$

2-5 A Dividing Polynomials

_____ 1. $a-7\overline{)a^2-2a-35}$

_____ 2. $n+9\overline{)n^2+12n+36}$

_____ 3. $n+4\overline{)n^2+5n-2}$

_____ 4. $n-2\overline{)n^2+3n+1}$

_____ 5. $x+3\overline{)x^3+27}$

2-5 B Dividing Polynomials

Divide the following by factoring the numerator and denominator and then simplifying.

_____ 1. $\dfrac{n^2+7n+10}{n+5}$

_____ 2. $\dfrac{n^2-8n-20}{n^2-13n+30}$

_____ 3. $\dfrac{n^2+4n+3}{n^2+7n+12}$

_____ 4. $\dfrac{n^2-16}{n^2+n-20}$

_____ 5. $\dfrac{n^2+9n-10}{n^2-3n-4}$

2-6 Solving quadratic equations by factoring

Solve these quadratic equations by factoring and finding the possible values of x.

_____ 1. $5x^2 + 13x + 6 = 0$

_____ 2. $6x^2 + 23x + 20 = 0$

_____ 3. $x^2 + 2x + 1 = 0$

_____ 4. $10x^2 + 29x + 10 = 0$

_____ 5. $x^2 + 6x + 5 = 0$

3-1 Functions

Let f(x) = 3x – 10 g(x) = x^2 h(x) = 2^x Find each value below.

_____ 1. h(-1)

_____ 2. h(3)

_____ 3. f(-5)

_____ 4. g(-5)

_____ 5. g(-5)

3-2 A Composite Functions

Let f(x) = 3x – 2 g(x) = x + 10 h(x) = 5x
Find each value below.

_____ 1. g(f(0))

_____ 2. g(f(3))

_____ 3. f(g(3))

_____ 4. h(h(2))

_____ 5. f(h(4))

3-2 B Domains

_____ 1. State the domain of the function: $f(x) = \sqrt{x-3}$

_____ 2. State the domain of the function: $f(x) = \sqrt{x+8}$

_____ 3. State the domain of the function: $f(x) = \frac{x^2-2}{2x+9}$

_____ 4. State the domain of the function: $f(x) = 4x - 2$

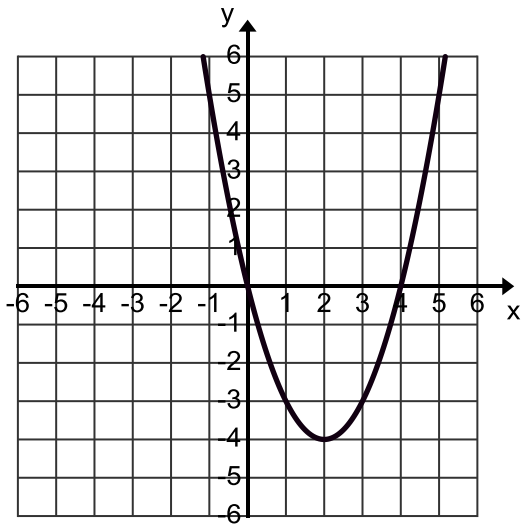
_____ 5. State the domain of the function: $f(x) = \frac{x^2-2}{x+9}$

3-3 A Domains and Ranges in graphs

Give the domain and range of the graphs below.

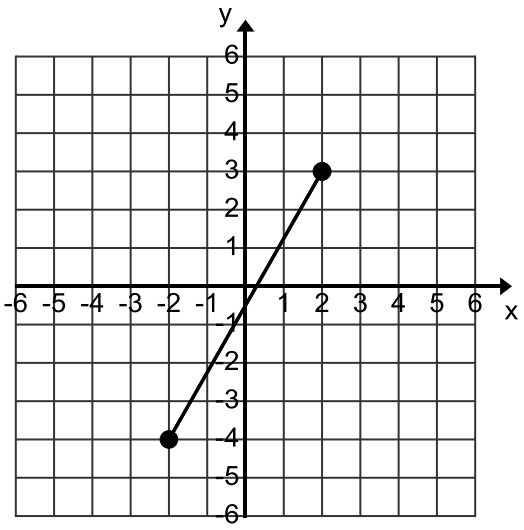
1. Domain = _____

   Range = _____



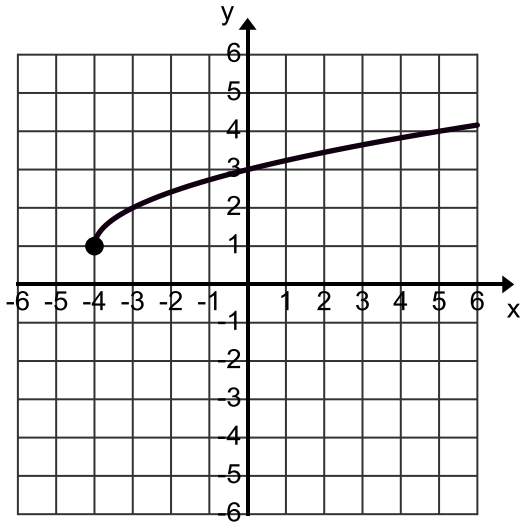
2. Domain = _____

   Range = _____



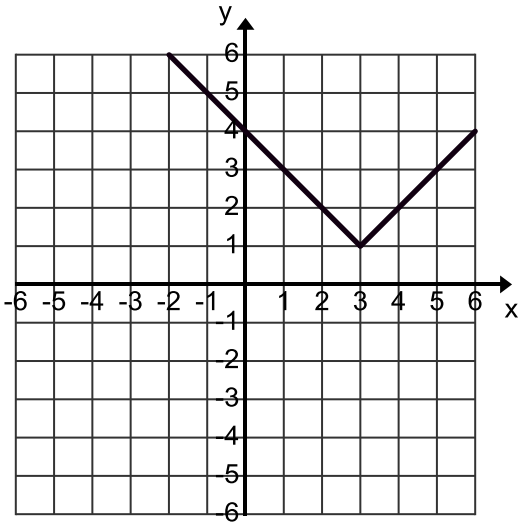
3. Domain = _____

   Range = _____



4. Domain = _____

   Range = _____



3-3 B Interval Notation

_____ 1. In interval notation, what is $x > 3$?
A. $(3,\infty)$ B. $[3,\infty)$ C. $(-\infty,3)$ D. $(-\infty,3]$

_____ 2. In interval notation, what is $x < 3$?
A. $(3,\infty)$ B. $[3,\infty)$ C. $(-\infty,3)$ D. $(-\infty,3]$

_____ 3. In interval notation, what is $x \leq 3$?
A. $(3,\infty)$ B. $[3,\infty)$ C. $(-\infty,3)$ D. $(-\infty,3]$

_____ 4. In interval notation, what is $2 < x \leq 5$?
A. $(2,5)$ B. $[2,5)$ C. $[2,5]$ D. $(2,5]$

_____ 5. What would represent the interval notation of $[-8,\infty)$?
A. $x < -8$ B. $x > -8$ C. $x \leq -8$ D. $x \geq -8$

3-4 Composition of Functions

Let $f(x) = 2x + 3$ $g(x) = x - 10$ $h(x) = 3x - 1$ $k(x) = x^2$

_____ 1. Find $f(g(x))$

_____ 2. Find $f(f(x))$

_____ 3. Find $k(g(x)$

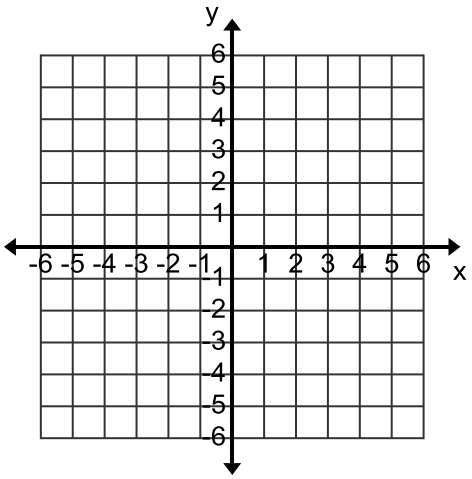
_____ 4. Find $h(g(x)$

_____ 5. Find $f(k(x)$

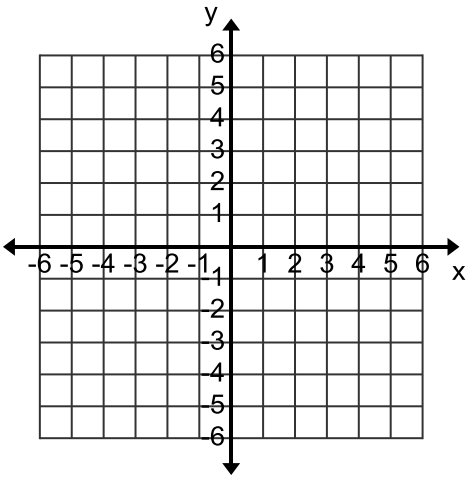
3-5 Graphing Inequalities

Graph the following inequalities on the graphs below.

1. $y > 2x - 1$

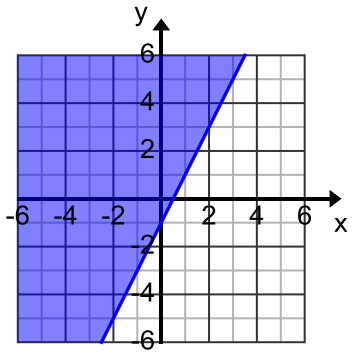


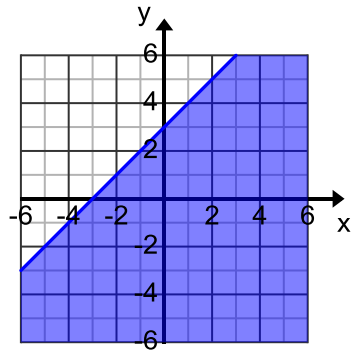
2. $y \geq \frac{2}{3}x - 2$

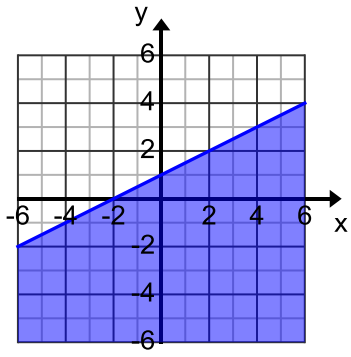


What inequalities are graphed below?

_____ 3. _____ 4. _____5.







4-1 A Slope

_____ 1. What is the slope of the line that contains the points (4, 10) and (6, 8)?

_____ 2. What is the slope of the line that contains the points (2, n) and (6, n + 6)?

_____ 3. What is the slope of the line that contains the points (-1, 18) and (1, 8)?

_____ 4. What is the slope of the line that contains the points (-4, 10) and (6, 9)?

_____ 5. What is the slope of the line that contains the points (4, 10) and (6, 8)?

4-1 B Midpoint

_____ 1. What is the midpoint of (4, 10) and (6, 8)?

_____ 2. What is the midpoint of (2, n) and (6, n + 6)?

_____ 3. What is the midpoint of (-3, 3) and (-5, -3)?

_____ 4. What is the midpoint (-4, n) and (6, n + 4)?

_____ 5. What is the midpoint of (0, 6) and (-4, -8)?

4-1 C Distance

Round your answers to the nearest tenth if needed.

_____ 1. What is the distance from (4, 10) and (6, 8)?

_____ 2. What is the distance from (2, n) and (6, n + 6)?

_____ 3. What is the distance from (1, 11) and (2, 9)?

_____ 4. What is the distance from (-4, 6) and (-6, 8)?

_____ 5. What is the distance from (2, 10) and (6, 8)?

4-2 Equation of lines in slope intercept form

_____ 1. Find the equation of the line, in slope intercept form, that goes through the point (2, 8) and has a slope of -3.

_____ 2. Give the equation of the line, in slope intercept form, that is parallel to $y = 8x - 5$ and passes through the point (1, 20).

_____ 3. Give the equation of the line, in slope intercept form, that is perpendicular to $y = 2x - 5$ and passes through the point (2, 8).

_____ 4. Find the equation of the line, in slope intercept form, that goes through the point (-1, -2) and has a slope of ½ .

_____ 5. Find the equation of the line, in slope intercept form, that goes through the point (2, 4) and (3, 10).

4-3 Standard form

_____ 1. Rewrite the equation $y = \frac{2}{3}x + 5$ in standard form.

_____ 2. Give the equation of the line in standard form that is parallel to y = 8x – 5 and passes through the point (1, 20).

_____ 3. Rewrite the equation 3y = -2x – 9 in standard form.

_____ 4. Rewrite the equation $3y = \frac{5}{6}x + 2$ in standard form.

_____ 5. Which equation below is not in standard form?
A. 3x – y = 5 B. 4x + y = -3 C. -2x + y = 9 D. x – y = -1

4-4 A Sigma Notation

_____ 1. $\sum_{n=1}^{3} 5n$

_____ 2. $\sum_{n=-2}^{1} 2n-1$

_____ 3. $\sum_{n=-2}^{0} n^2$?

_____ 4. $\sum_{n=-2}^{3} 2-n$?

_____ 5. $\sum_{n=2}^{4} -3n+4$

4-4 B Factorial Notation

_____ 1. $\frac{28!}{27!}$

_____ 2. $\frac{40!}{38!}$

_____ 3. $\frac{100!}{98!}$

_____ 4. $\frac{8!7!}{6!5!}$

_____ 5. $\frac{6!}{2!4!}$

4-5 Permutations

_____ 1. I have a safe in my house that has a key pad on it with the digits 0 – 9 on it. If my combination is a 5 digit code, how many possible combinations exist?

_____ 2. Old VA license plates used to be 3 letters followed by 3 numbers. How many license plates could the state make in this manner?

_____ 3. My password to log on to my computer is 3 letters followed by 3 digits. What is the probability you could break my code in one try?

_____ 4 . A zip code is a 5 digit number that the post office uses to help deliver the mail. How many zip codes exist?

_____ 5. From the 15 players, I have to select 6 players to bat in my new game called "Hickam ball." I must put them in order from 1^{st} at bat to 6^{th} at bat. How many different options do I have?

4-6 Combinations

_____ 1. Of the 20 kids in my "Hickam fan club" 10 of them will be picked to serve tea at the Hickam family reunion. How many combinations can I pick from the 20 kids? Order doesn't matter.

_____ 2. How many different ways can a 10 question True/False quiz be answered?

_____ 3. Pizza Hut offers a large 3 topping pizza for $9.99 as its special this month. If they have 8 toppings from which you can choose, how many different possibilities can you make assuming you choose 3 toppings?

_____ 4. Of the 10 pairs of shorts in my closet, I can only take 3 with me on my vacation to Bermuda. How many possible combinations exist?

_____ 5. From the 20 kids in the class, I must pick 2 to represent my homeroom as Class Officers. How many possibilities exist?

5-1 Solving Equations using Substitution

Find the x and y value using substitution.

x = _____ y = _____ 1. $\begin{cases} y = -x + 5 \\ x + 2y = -2 \end{cases}$

x = _____ y = _____ 2. $\begin{cases} x = 6 + y \\ 3x + y = 18 \end{cases}$

x = _____ y = _____ 3. $\begin{cases} y = 3x - 1 \\ y + x = 15 \end{cases}$

x = _____ y = _____ 4. $\begin{cases} y = 3x - 5 \\ y = 2x - 1 \end{cases}$

x = _____ y = _____ 5. $\begin{cases} y = 3x - 5 \\ 4x + 2y = 40 \end{cases}$

5-2 Solving Equations using Elimination

Find the x and y value using substitution.

x = _____ y = _____ 1. $\begin{cases} 2x + y = 5 \\ x - y = 1 \end{cases}$

x = _____ y = _____ 2. $\begin{cases} 3x + 2y = 17 \\ 2x + 5y = 15 \end{cases}$

x = _____ y = _____ 3. $\begin{cases} 2x - y = 8 \\ 3x + y = 12 \end{cases}$

_____ 4. For $2.10, you can get 3 eggs and a cup of coffee.
For $2.60, you can get 4 eggs and a cup of coffee.
How much are you paying for the coffee?

_____ 5. I plan on taking a vacation on a Cruise Ship this winter.
A 3 day cruise with 8 included meals cost $600.
A 5 day cruise with 12 meals cost $780.
How much are they charging me for each day on the ship?

5-4 Matrices

$A=\begin{bmatrix}3 & 4 & 7\end{bmatrix}$ $B=\begin{bmatrix}2\\7\\1\end{bmatrix}$ C=$\begin{bmatrix}4 & 2\\6 & 5\end{bmatrix}$ D=$\begin{bmatrix}4 & 2 & 8\\3 & 3 & 5\\1 & 1 & 6\end{bmatrix}$

$E=\begin{bmatrix}4 & -2\\3 & -1\end{bmatrix}$ $F=\begin{bmatrix}5 & 2\\2 & 1\end{bmatrix}$ $G=\begin{bmatrix}-3 & 0\\-2 & 6\end{bmatrix}$

_____ 1. What is CE?

_____ 2. What is DD?

_____ 3. What is FG?

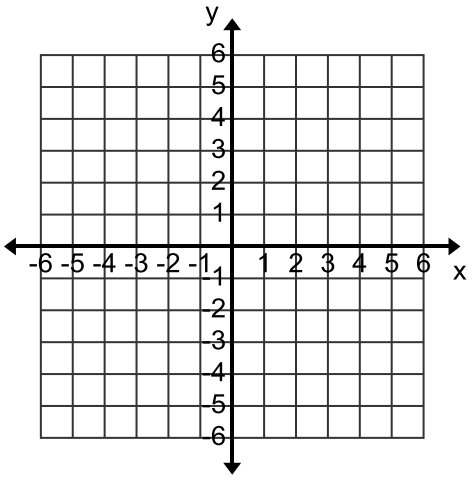
_____ 4. What is E + F?

_____ 5. What is AB?

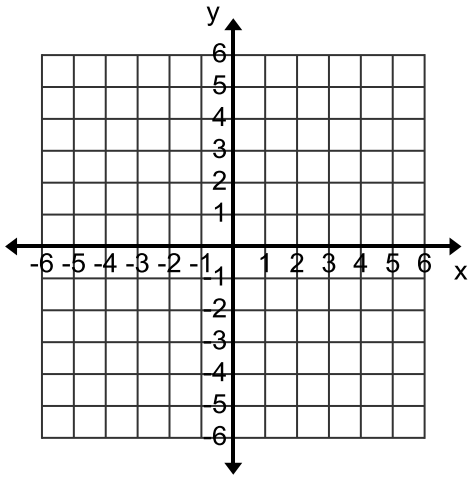
6-1 Graphing Systems of Inequalities

Graph the following on the given graphs.

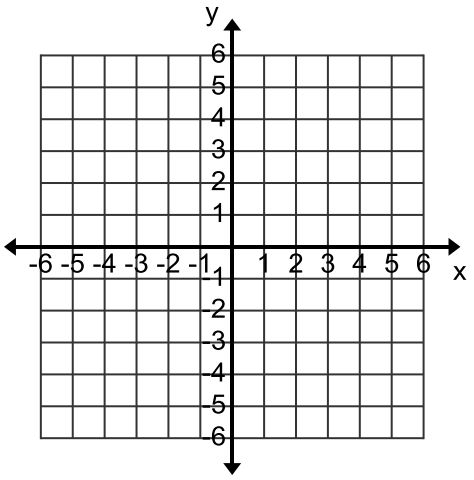
1. $\begin{cases} y \le 3x - 1 \\ y > -2x + 1 \end{cases}$



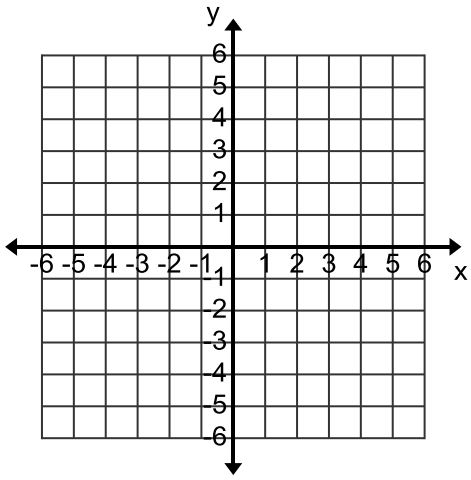
2. $\begin{cases} y > 1 \\ y < 3 \end{cases}$



3. $\begin{cases} y \le 2x - 1 \\ y > -2x + 1 \end{cases}$



4. $\begin{cases} x > 1 \\ x < 3 \end{cases}$



6-2 Parent Graphs

Tell what equation is graphed.

_____ Graph 1

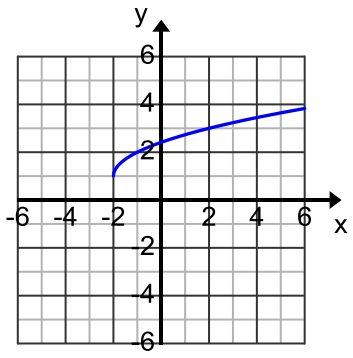
_____ Graph 2

_____ Graph 3

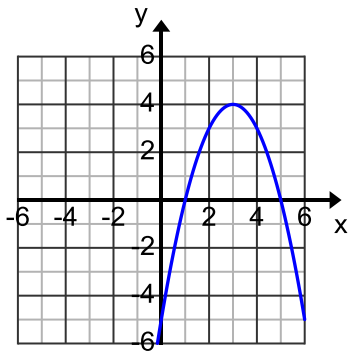
_____ Graph 4

_____ Graph 5

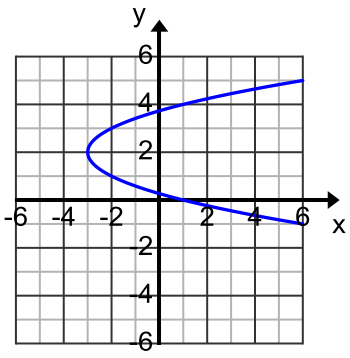
Graph 1



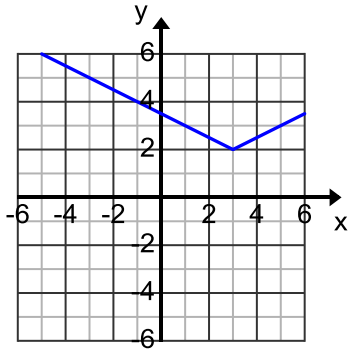
Graph 2



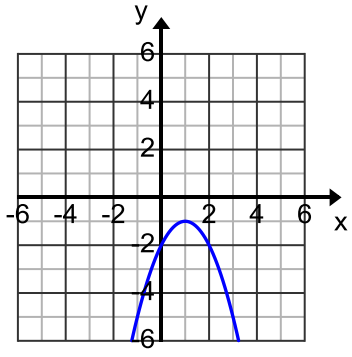
Graph 3



Graph 4



Graph 5



6-3 A Asymptotes

Determine the horizontal and vertical asymptotes for each function.
If none exists for the function, just write "none."

1. $y = \frac{x}{x^2 - x - 12}$ H = _____ V = _____

2. $y = \frac{x^3 + 5}{2x - 2}$ H = _____ V = _____

3. $y = \frac{-2}{x - 5}$ H = _____ V = _____

4. $y = \frac{4x - 6}{x - 5}$ H = _____ V = _____

5. $y = \frac{x^2 + 5x + 3}{x^2 - 9}$ H = _____ V = _____

6-3 B Asymptotes

Determine whether a hole exists or what the slant asymptote equation is.

1. $y = \frac{x^2 - x - 2}{x + 2}$ Hole = _____ Slant = _____

2. $y = \frac{x^2 + 2x - 8}{x - 2}$ Hole = _____ Slant = _____

3. $y = \frac{x^2 + 8x + 7}{x + 1}$ Hole = _____ Slant = _____

4. $y = \frac{x^2 + 3x + 2}{x + 2}$ Hole = _____ Slant = _____

5. $y = \frac{x^2 + 10x + 9}{x + 1}$ Hole = _____ Slant = _____

6-4 Absolute Value Inequalities

_____ 1. Solve for x: $|x+3|>1$

_____ 2. Solve for x: $|5x-1|<-1$

_____ 3. Solve for x: $|2x-1|>-1$

_____ 4. Solve for x: $|x-6|<-1$

_____ 5. Solve for x: $|5x-1|<-1$

7-1 A Derivatives

Calculate the derivative of each function.

_____ 1. $f(x) = 3x^2 + 5x - 2$

_____ 2. $f(x) = -4x^3 + 5$

_____ 3. $f(x) = 3x^3 + 5x^2 - 2x$

_____ 4. $f(x) = \frac{3}{x^2} + \frac{2}{x} - 1$

_____ 5. $f(x) = \frac{6}{x^4} + \frac{3}{x}$

7-1 B Slope of Line Tangent to the Graph

Find the slope of the line tangent to the graph of the given function at the given point.

_____ 1. $f(x) = 3x^2 + 5x - 2$ at the point (2, 20)

_____ 2. $f(x) = x^3 + 5x^2 - 1$ at the point (1, 5)

_____ 3. $f(x) = x^5$ at the point (1, 1).

_____ 4. $f(x) = 2x^3 + 3$ at the point (2, 19)

_____ 5. $f(x) = x^4 + 3x^2 + x$ at the point (1, 5)

7-2 Equations of Tangent Lines

Give the equation of the line tangent to the given graph at the given point. Put the equation in slope-intercept form.

_____ 1. $f(x) = x^3 + 4x^2 - 10$ at (2, 14)

_____ 2. $f(x) = 4x^3 + 4x^2 - 4x$ at (1, 4)

_____ 3. $f(x) = x^3 + x^2$ at (1, 2)

_____ 4. $f(x) = x^5 + 4x^2 - 10x$ at (1, -5)

_____ 5. $f(x) = 2x^3 + 3x^2 - 4x$ at (2, 20)

7-3 Critical Points (Maximums, Minimums, and Points of Inflection)

_____ 1. Find the critical points of $f(x) = x^4 - x^2 - 6$.

_____ 2. Find the critical points of $f(x) = \frac{1}{4}x^4 - 2x^2$

_____ 3. Find the critical points of $f(x) = \frac{1}{4}x^4 + x^3 - \frac{1}{2}x^2 - 3x$

_____ 4. Find the critical points of $f(x) = \frac{1}{2}x^2 + 4x$

_____ 5. Find the critical points of $f(x) = \frac{1}{3}x^3 - 9x$

7-4 x-intercepts and y-intercepts

In 1-5, find the x-intercepts and the y-intercepts of the given equations.

1. $f(x)= x^2 + 6x – 5$ x-intercept = _____ y-intercept = _____

2. $f(x)= 9x – 18$ x-intercept = _____ y-intercept = _____

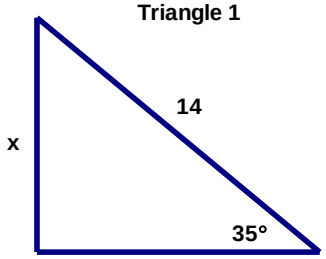
3. $f(x)= x^2 – 7x – 8$ x-intercept = _____ y-intercept = _____

4. $f(x)= x^3 + x^2 – 4x – 4$ (factor by grouping) x-intercept = _____ y-intercept = _____

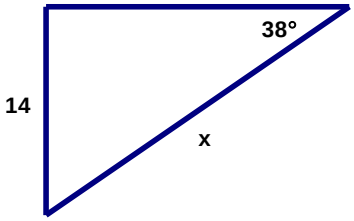
5. $f(x)= 2x – 10$ x-intercept = _____ y-intercept = _____

8-1 SOHCAHTOA

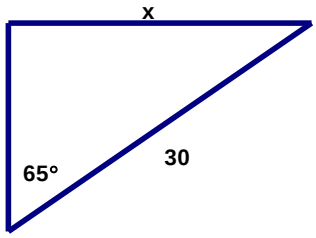
Triangle 1



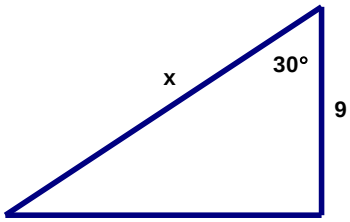
Triangle 2



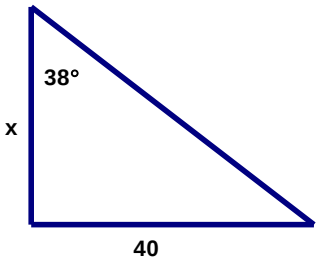
Triangle 3



Triangle 4



Triangle 5



All triangles above are right triangles.

_____ 1. What is the value of x in Triangle 1 above?

_____ 2. What is the value of x in Triangle 2 above?

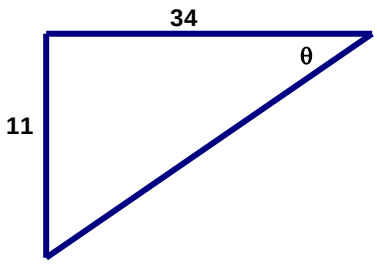
_____ 3. What is the value of x in Triangle 3 above?

_____ 4. What is the value of x in Triangle 4 above?

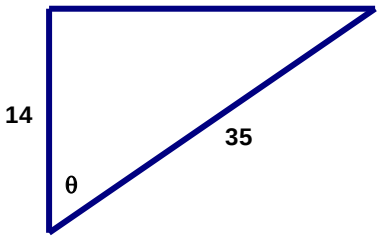
_____ 5. What is the value of x in Triangle 5 above?

8-2 SOHCAHTOA 2 Finding the angle

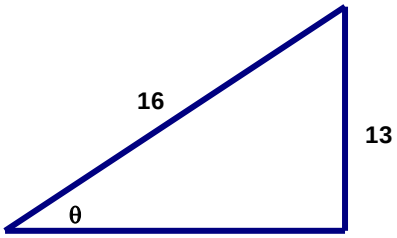
Triangle 1



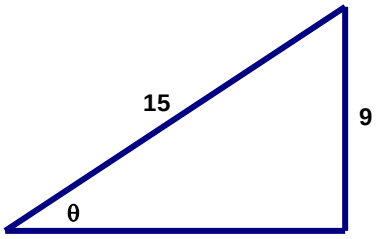
Triangle 2



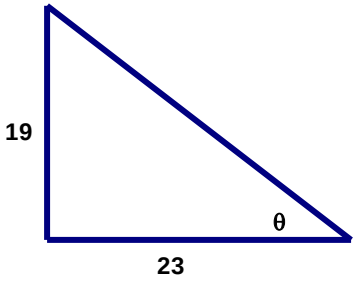
Triangle 3



Triangle 4



Triangle 5



All triangles above are right triangles.

_____ 1. What is the value of Θ in Triangle 1 above?

_____ 2. What is the value of Θ in Triangle 2 above?

_____ 3. What is the value of Θ in Triangle 3 above?

_____ 4. What is the value of Θ in Triangle 4 above?

_____ 5. What is the value of Θ in Triangle 5 above?

8-3 Law of Cosines

Figure 1

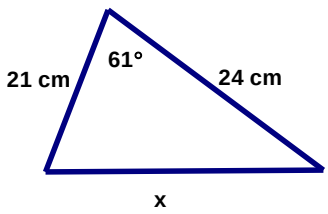


Figure 2

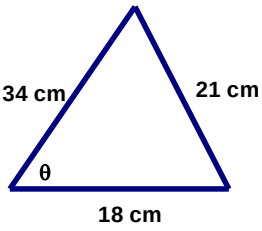


Figure 3

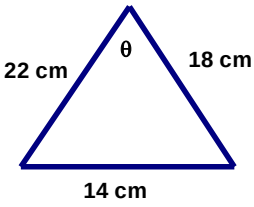


Figure 4

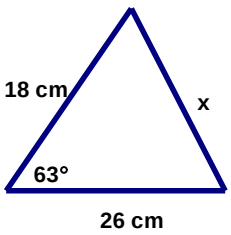
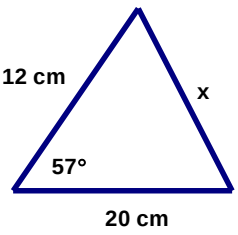


Figure 5



1. x = _____ 2. Θ = _____ 3. Θ = _____

4. x = _____ 5. x = _____

8-4 Law of Sines

Figure 1

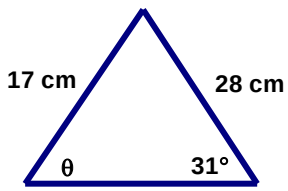


Figure 2

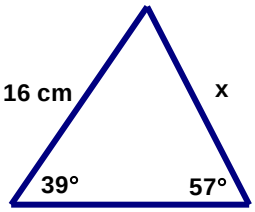


Figure 3

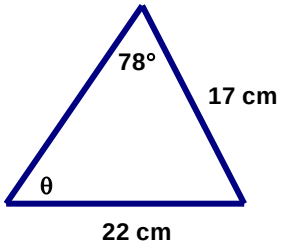


Figure 4

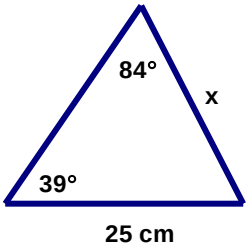
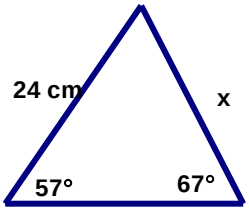


Figure 5

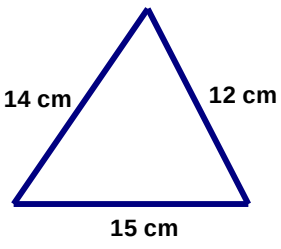


1. Θ = _____ 2. x = _____ 3. Θ = _____

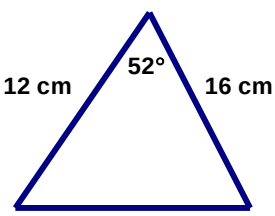
4. x = _____ 5. x = _____

8-5 Heron's Formula and Area of triangles

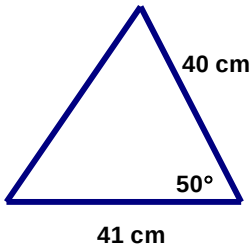
Triangle 1



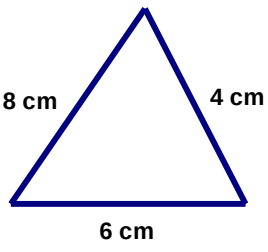
Triangle 2



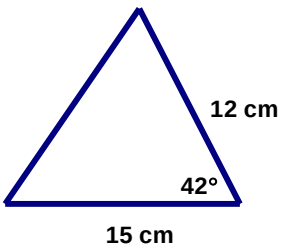
Triangle 3



Triangle 4



Triangle 5



Give the area of each triangle.

1. _____ 2. _____ 3. _____ 4. _____ 5. _____